TRIENNIAL REPORT

ON

VACCINATION IN BURMA

FOR THE YEARS 1914-15 to 1916-17

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RESOLUTION

ON THE

TRIENNIAL REPORT ON VACCINATION IN BURMA

FOR THE YEARS 1914-15 TO 1916-17.

Extract from the Proceedings of the Government of Burma in the General Department,—
No. 1Z.-7, dated the 12th July 1917.

READ—

The Triennial Report on Vaccination in Burma for the years 1914-15 to 1916-17.

RESOLUTION.—In the first two paragraphs of the Triennial Report on Vaccination in Burma the Sanitary Commissioner has given an interesting review of vaccination and has discussed its relation to small-pox epidemics. He comes to the conclusion that three main factors stimulate the work of vaccination and first among those factors he places outbreaks of epidemic small-pox. In the triennium under report there was an absence of serious epidemics of the disease and this is reflected in the vaccination figures. The total number of operations fell by over 4 per cent. but was still nearly 27 per cent. in excess of the number for the period 1908-09 to 1910-11. The decline is surprisingly small in view of the absence of the natural stimulus provided by small-pox epidemics and of the dislocation of the work of the department by the recall to military duty of so many members of the Sanitary staff. The satisfactory nature of the results is attributed by the Sanitary Commissioner to improved organization and supervision of the District Vaccination staffs and to the increased interest taken by District Officers in the work. His Honour is pleased to note that in the Pegu, Irrawaddy and Sagaing Divisions and in three districts of the Tenasserim Division the good work of Civil Surgeons aided by the District Officers has resulted in an increase in the number of primary vaccinations in the triennium. In other districts the apathy of the rural population in the absence of small-pox is said to have rendered the efforts of Civil Surgeons ineffective, while in some districts jail duties hampered these officers in their work of supervision. It is more difficult to find an excuse for the state of vaccination in Thatôn and the Sanitary Commissioner's strictures on the organization of the work in that district are, in the opinion of the Local Government, fully justified. The number of persons successfully vaccinated per 1,000 of population in 1916-17 was less than half the average for the other districts of the Division, and was the lowest in Lower Burma. The only districts in Burma proper which returned lower ratios were Bhamo, Myitkyina and Putao. The Sanitary Commissioner suggests that considerable improvement is possible also in the vaccination work of Shwebo District and of the Magwe and Meiktila Divisions. His remarks on the benefits of supervision are commended to the attention of all officers. The reorganization of vaccination work in the Northern Shan States has resulted in an immediate improvement in the results. A comparison of the figures in Statement No. 1 would lead one to believe that the work of vaccination in the Southern Shan

States was better than in the Northern Shan States. The Sanitary Commissioner however doubts the value of the returns, and a reorganization of the establishment is being gradually carried out. On the whole the progress of vaccination in the province in the triennium has been well maintained.

2. The Sanitary Commissioner shows in his report that small-pox is brought into Burma chiefly by sea, and that epidemics in Indian provinces on the Bay of Bengal are generally followed by an outbreak in Burma. While Rangoon is never free of small-pox, the disease is kept in check there by the efficiency of the vaccination department. But vaccination of the residents of Rangoon alone could not prevent the spread of the disease to rural areas where the population is not so well protected as in Rangoon. The necessary power to deal with immigrants of the labouring classes was given by the Vaccination Law Amendment Act of 1909, and since 1915 the prevalence of the disease in India coupled with the anticipation of a severe outbreak in 1917 has induced the Local Government to enforce the Act more rigorously. Representations have recently been received that the Act operates harshly and a Committee is being appointed to enquire into its working and to make recommendations as to the necessity of continuing the precautions now adopted.

3. The expenditure of the department is steadily increasing. In 1913-14 the expenditure was Rs. 2,04,873, and in the following years it rose gradually by sums of approximately Rs. 1,400, Rs. 14,200 and Rs. 7,200. The greater part of the increase was spent on establishment, which cost about Rs. 15,000 more in 1916-17 than in the first year of the triennium. There was a considerable drop in the expenditure on contingencies in 1914-15, but this item again rose high in the following two years. The average cost of each successful case was 8 annas and 7 pies as against 7 annas 6 pies in the previous triennium. The Vaccine Depôt at Meiktila continued to do good work and in 1915-16 recorded the highest percentage yet obtained of successful results in primary operations. The number of doses issued fell slightly in the triennium from 2,206,545 to 2,179,724. The Depôt accounted for a good part of the increased expenditure of the Department in spite of the fact that economy was exercised in every branch of expenditure. It is unsatisfactory that certain vaccination establishments are so wasteful of the lymph. The figures were particularly bad in the Mandalay Municipality and Thatôn District where the wastage exceeded 50 per cent. The Local Government hopes that the Sanitary Commissioner will take vigorous action where such cases are discovered.

4. The highest figures both for primary vaccinations and for re-vaccinations were recorded in the last year of the triennium. The former figure was lower than the corresponding figure for 1913-14, but re-vaccinations in 1916-17 were more numerous than in any other year since 1911-12. It may be noted that in 1916-17 the ratio per 10,000 of population of successful vaccinations in Lower Burma was the highest since 1901-02. The percentage of inspection done by Civil Surgeons was slightly lower than in the previous triennium but was higher than the minimum of 10 per cent. considered sufficient by the Sanitary Commissioner. On the other hand, there is a tendency to confine the inspection to the same areas every year, and the percentage of inspection varies enormously

from 100 per cent. of primary vaccinations in Putao, 82·33 in Tavoy and 51·18 in Minbu to ·91 in Bassein. As already indicated the other duties of a Civil Surgeon in many cases make it difficult for him to supervise the work of vaccination but the Local Government agrees with the Sanitary Commissioner in the opinion that in many districts the verification of results is left too much in the hands of subordinates. The percentage of inspection by Native Superintendents of Vaccination did not vary widely from that recorded in the period 1911—14.

5. His Honour's thanks are due to Lieutenant-Colonel C. E. Williams, I.M.S., Sanitary Commissioner, for his success in carrying on the work of the Department amid serious difficulties arising from a shortage of officers, to Dr. W. D. Jones for his work at the Vaccine Depôt, and to the numerous officers, both medical and civil, who have helped in the work of vaccination.

By order of the Lieutenant-Governor of Burma,

C. M. WEBB,
Secretary to the Government of Burma.

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TRIENNIAL REPORT

ON

VACCINATION IN BURMA

FOR THE YEARS 1914-15 to 1916-17.

1. *General review of Vaccination Work.*—The outstanding feature of the return of vaccination work during the triennium ending with 1916-17 is a decrease in the number of operations, both primary and revaccination, performed, as contrasted with the work of the previous triennial period. Whereas the returns of the triennium ending with 1913-14 showed an increase in the total operations performed of 32·51 per cent. on the work of the period 1908-09 to 1910-11—those of the triennium under review show a decline of 4·23 per cent. on the intermediate period though still 26·91 per cent. in excess of the earlier triennium. The total decrease amounts to 65,729 cases, including 38,355 primary operations and 27,374 revaccinations. Statement I.

As will presently be shown, a large part of this decrease has been due to circumstances beyond human control—mainly to the freedom from visitation of the Province by small-pox in serious epidemic form during the last triennium, and in a minor degree to the effects of the war, which have deprived the Department of the services of the whole of the Assistant and Subordinate Medical staff of the Sanitary Department previously available to assist in the supervision of vaccination. This deprivation has been almost complete since the end of 1914. The Department has thus lost the services of 2 Deputy Sanitary Commissioners, 15 Military Assistant Surgeons, and 13 Military and Civil Sub-Assistant Surgeons. There has also been much disorganization of sanitary control owing to frequent changes in the personnel of District Civil Surgeons, most of the more experienced of whom have been transferred to military duty.

The main factors which stimulate vaccination work in Burma may be briefly stated as follows:—

(1) Outbreaks of epidemic small-pox.

(2) Improved organization and supervision of the District Vaccination staffs, with which must be included an increase in establishment.

(3) Increased interest shown in Vaccination work by Deputy Commissioners and their Assistant District Officers, and by Presidents and Members of Municipal Committees

The reverse conditions constitute factors unfavourable to the progress of vaccination, and speedily make their influence apparent in the vaccination returns.

So great has been the effect in the past of small-pox prevalence in Burma Districts in imparting vigour to the work of vaccination establishments, that the apparently paradoxical result obtains that success in preventive measures against small-pox leads to a diminution in protective work subsequently performed. Chief among these preventive measures is the operation of vaccination itself. The decrease of small-pox prevalence is closely accompanied by a total cessation of the spontaneous demand for vaccination by the public. At the same time, a decrease in the enhanced activity of the medical and lay district officials in pushing vaccination is a usual result of relief from the threat of epidemic outbreaks.

It was therefore as certain as that the night follows the day, that the vaccination returns of the last triennium would show a diminution on those of the preceding three-year period. The returns for the period under review show however that this law is subject to modification under conditions favourable to the progress of the vaccination propaganda, especially those conditions classed as (2) and (3) of the stimulating factors stated above. As the following analysis of the returns of the several Divisions and Districts will disclose these last-named factors have had the effect in large and important areas of counteracting unfavourable influences, and have effected a very considerable and gratifying advance in vaccination in the districts concerned. It will also be shown that in Lower Burma the greater part of the falling off in vaccination is limited to a few districts, and that elsewhere real progress has been made. If we exclude from present consideration the Arakan Division, the circumstances of which will be shown to be peculiar and not closely comparable to those of the rest of Burma, we find that the returns of the other three Divisions of Lower Burma show a total increase in primary operations of 33,977, equal to 6·36 per cent. of the aggregate for the previous triennium. If again we exclude the returns of the six defaulting districts (Amherst, Thatôn, Rangoon, Henzada, Pegu, Mergui) it is found that in the 11 remaining districts, there has been an advance of 64,549 primary operations in these districts, or 22·36 per cent. on the work of primary vaccination achieved in the previous triennium. This increase is limited to the

Pegu and Irrawaddy Divisions and to three districts of the Tenasserim Division. It has been mainly due to improved organization and supervision, to greater energy on the part of Civil Surgeons, and to the active support furnished by Deputy Commissioners and their assistants.

In the four Divisions of Upper Burma, a falling off in primary operations of 44,726 or 8·69 per cent. of the work of the previous triennium, and of 33,672 revaccinations (34·14 per cent.), is observed. This decrease affects three Divisions; Sagaing Division alone showing an increase of 6,846 primary operations, which is shared in by all four districts. The all but complete absence of epidemic small-pox in Upper Burma Districts during the years 1914, 1915 and 1910 is the principal explanation of the decrease in the output of vaccination work in the other three Divisions.

2. *Small-pox and Vaccination.*—The intimate relation between the prevalence of epidemic small-pox and increased vaccination work in Burma, merits a review here of the course of small-pox in the Province.

The evidence of statistics and of the chronological sequence of events shows convincingly that small-pox infection is an exotic which is maintained in, or reintroduced into Burma by importation from India through the ports of Lower Burma, and through that of Rangoon for the most part. Arakan is liable to infection by land from Chittagong, but this infection does not extend by land into the Irrawaddy Valley or Delta.

The port of Rangoon is in direct steamer connection with the ports of Bengal and Madras, and hundreds of thousands of deck passengers from those Provinces, and *viâ* Calcutta, from Bihar and Orissa, the United Provinces, and the Punjab, arrive annually in Rangoon. The chronological association of small-pox prevalence in Burma with epidemic outbreaks in Madras, Bengal, and Bihar and Orissa, is a close one, and during epidemics in Madras and Bengal Presidencies many cases of the disease are landed in Rangoon, and a proportion of these come from interior parts of the two Presidencies at a time when the ports of departure are declared free from the disease or only lightly infected.

During the last two decades (to which my enquiry has been limited) small-pox has with almost clock-like regularity broken out afresh in widespread epidemic form in Burma at intervals of five years. The outbreak usually attains its maximum in the second year, and then rapidly diminishes and five years later recurs. The interval between the commencement of two successive outbreaks is thus six years. Rangoon is never free from small-pox, but usually shows an exacerbation of the disease in the year preceding the development of an epidemic in the coastal and interior districts of Lower Burma. Recent epidemics in Rangoon have been less severe than formerly, owing to an improved vaccination department, and more particularly to the passing of the Vaccination Act of 1909, which permits of the examination of all incoming deck passengers of the labouring classes, and their summary vaccination if found to be unprotected. This Act has been applied to Rangoon somewhat spasmodically, but with greater vigour since 1915, and its effect has been wholly salutary, so much so that the anticipated outbreak of small-pox in Lower Burma at the commencement of 1917, the fifth year since the cessation of the last serious outbreak in Burma (in 1912), has aborted. In 1916, 343 deaths from small-pox were returned by Rangoon, in due sequence to the last previous severe outbreak of 1911 in that port, and fears were entertained of a serious outbreak in Lower Burma in 1917. This is now very unlikely to occur since it has been the experience of the last thirteen years that such epidemics develop and expend their energies before the end of May. Moreover the source of origin, Rangoon, which shares simultaneously with the neighbouring districts in the development of the epidemic, has returned only 10 deaths since the 1st January. It would seem as if the infection had been "scotched" at its source, and largely through the vigilance of the Port Health staff, assisted by the Vaccination staff of the Rangoon Health Department; who vaccinated in 1916 no less than 28,378 "unprotected" deck passengers out of a total of 29,310 declared by the Port Health Department; about 13 per cent. of the emigrants from India. During 1916 the officers of the last-named Department detected unreported cases of infectious disease in 20 per cent. of 217 "healthy" vessels inspected under the Vaccination Act, and dealt with 56 cases of imported small-pox. Unfortunately the facilities now offered for inspection of immigrants in the port of Rangoon are inadequate, and only permit the Port Health staff to give partial effect to the powers vested in it under the Vaccination Act of 1909. An extension of the wharf accommodation and some increase of staff would reduce to a minimum the risk of introduction of sea-borne small-pox infection into Burma, and the inevitable small local outbreaks could be more easily frustrated by the district organizations.

It remains only to add that epidemics of small-pox follow the line of the railways and main watercourses radiating from Rangoon, and that they affect Upper

Burma in the second year from their onset in the coastal districts, which is usually the third year from their commencement in Rangoon.

3. *Comparative study of vaccination operations*:—

Arakan Division.—The deficiency of 36,838 operations in the Arakan Division in the triennium under review is subject to a simple explanation which leaves no room for doubt. This deficiency includes 27,248 primary and 9,590 revaccinations. The decrease in primary operations affects principally the returns of Kyaukpyu and Sandoway Districts, but there is also a deficit of 534 primary operations in Northern Arakan District, Akyab District showing an increase for the last triennial period of 3,717 primary operations. Statement I.

The deficiency in the Kyaukpyu District returns is wholly dependent upon the almost complete absence of small-pox mortality in that district during the last triennium whereas there were two serious outbreaks of the disease in 1911 and 1913 respectively; the latter, which was the more severe, accounted for 405 registered deaths. To cope with the epidemic the permanent establishment of six vaccinators was augmented by six additional temporary employees for a period of some months. The combined establishment claimed to have performed during the twelve months 19,861 primary operations, with 18,872 known successes; and 1,128 revaccinations with 673 successes. Only 3,431 (17·3 per cent.) primary operations and 88 (7·8 per cent.) revaccinations were inspected by the Civil Surgeon and can be accepted as absolutely authentic operations. Serious doubt is thrown upon the genuineness of the returns of this district for the whole triennial period, which claim 44,366 primary operations, amounting to the whole census population of the district up to the age of 10 years. An abnormally large staff was employed in 1913-14, proportionally to population at least double that of any district of Burma proper.

For Sandoway District the decrease in the number of primary operations amounting to 4,258 or 29·6 per cent. on the returns of the previous triennium is explained by the late Civil Surgeon Dr. Maung Tha Noo, himself an Arakanese, as being largely due to the ignorance, backwardness, and apathy, of the rural population, in the absence of the stimulus created by small-pox mortality. Only two deaths from this disease have been reported in the district during the past triennium.

Pegu Division.—A total increase in the last triennium of 26,966 (14·63 per cent.) primary operations and 13,161 (10·14 per cent.) revaccinations is returned for this Division. Insein and Hanthawaddy Districts each return between 10,000 and 11,000 primary operations in excess of the previous triennium. The vaccination establishments of these two districts are under one Civil Surgeon and their work may be reviewed as for the conjoined district, which was a single administrative unit in 1911-12. Starting with the 7,279 primary operations performed in the whole area in that year, and 8,563 in 1912-13, the great advance has been made to 21,612 in 1916-17. The last serious epidemic of small-pox in the district occurred in 1912, so that the whole of the progress has been made without the stimulus of small-pox prevalence.

In the triennial report for 1911-12 to 1913-14 it was stated that the excess primary operations in this conjoint district over the work of the previous triennium amounted to 96·68 per cent. In the triennium under review the further advance of 60·81 per cent. was achieved.

Pegu District returns show a deficit of 2,118 primary operations, and Rangoon Town District of 3,677. The output of work in Pegu District reached its maximum in 1913-14, stimulated perhaps by the considerable small-pox mortality of the two previous years, and has shown a rather sudden drop to pre-epidemic conditions in the triennium under review. Rangoon returns showed a falling off in primary vaccination from 1911-12, an epidemic year, with 10,428 primary operations, to 6,621 in 1914-15 and has to some extent recovered in 1916-17 to 8,052 in face of another, though much less severe, outbreak of small-pox. In this town 108,593 revaccinations were performed during the last triennium, an excess of 9,490 on the preceding period; and of this total 56,541 or more than 50 per cent. were carried out in 1916-17.

Next to the advance made in the vaccination work of the Insein-*cum*-Hanthawaddy District that of the Prome District calls for encomium. Throughout the preceding triennium primary vaccination had steadily declined in this district to 9,689 operations in 1913-14. During the triennium under report it has as steadily risen to 13,919 primary operations in 1916-17, ; the excess work for the last triennium is 7,597 primary operations (25·31 per cent.) and 6,241 revaccinations 52·95 per cent. It is understood that this progress owes much to the active support of the Deputy Commissioner Mr. C. S. Pennell, I.C.S., who has personally interested himself in improving the condition of vaccination in his district. The Civil Surgeon, Major Nolan, I.S.M.D., is also to be congratulated.

In the Tharrawaddy District a fairly high level of work has been maintained during the last triennium, under the direction of Dr. Leonard, the Civil Surgeon an increase of 3,560 primary operations over the total of the preceding triennial period being attained. The maximum figure for primary vaccination was, however, recorded in 1911-12 a year of widespread epidemic small-pox in the district.

Irrawaddy Division.—Mau-bin District. Progress in vaccination in this district has been continuous though at a less rate than during the preceding triennium, an excess of 4,868 primary operations and 4,348 revaccinations being recorded over the work of the earlier period, the maximum being reached in 1916-17 with 15,307 primary and 3,214 revaccinations. There has been no serious outbreak of small-pox since 1912. The great improvement in vaccination in this district dates from the commencement of the previous triennium, and was dependent upon vigorous action taken by the Deputy Commissioner, Captain Roberts, I.A., under whose direction an advance was made from 2,878 primary operations in 1908-09 to 14,375 in 1913-14. The excellent traditions then established have been maintained up to date.

Pyapôn District.—A highly gratifying advance in vaccination has been effected during the last triennium in this district. The returns of primary operations show an increase of 11,741 cases, or 112·57 per cent. on the work of the previous triennium. Progress during the last three years has been rapid, from 4,791 operations in 1914-15 to 9,400 in 1916-17. The totals for primary operations during the last three successive triennia have been 6,196, 10,430 and 22,171. We owe this improvement to the energetic efforts of two recent Civil Surgeons—Civil Assistant Surgeon Maung Shwe Ge, and Dr. Aung Tun, assisted by the active support of the Deputy Commissioner and his subordinate officers. It can no longer be held as it was a few years ago that the population of this district is actively antagonistic to vaccination, and such opposition as was met with in earlier years, which was the result of neglect and indifference on the part of the administrative staff with regard to vaccination, has yielded to the tact and industry of the medical officers which has received more generous support by the lay authorities.

Bassein District.—An increase of only 973 primary operations accompanied by a falling off of 280 revaccination marks the work in this district during the last triennium. A level outturn of work has been maintained.

Henzada District alone in the Division shows a decrease in vaccination work amounting to 1,804 primary operations and 6,117 revaccinations during the triennium under report. The last serious epidemic of small-pox in this district was in 1912 and the highest outturn of primary operations in 1911-12, also a small-pox year. The average level of work has been fairly well maintained during the past two years.

Myaungmya District.—An increase of 885 primary and 1,033 revaccinations on the work of the previous triennium is reported—vaccination work had fallen off considerably in the previous period, but has shown a satisfactory recovery since 1913-14, rising from 5,636 primary operations in that year to 10,352 1916-17. The more energetic work of successive Civil Surgeons aided by the active support of the Deputy Commissioner is responsible for this improvement. Vaccination work in this and other districts of the Delta is seriously hampered by difficulties of transport and communication, and in Myaungmya District the Civil Surgeon is tied to Headquarters by his duties and responsibilities as Superintendent of the Central Jail, which reduce opportunities for district touring to a minimum. The provision of a motor launch for the use of the Civil Surgeon of each of the districts of this Division would greatly facilitate his district work, and lead to the more rapid extension of vaccination in rural areas.

Tenasserim Division.—Amherst District returns a decrease of 14,928 primary operations (23·26 per cent.) and 2,615 revaccinations (15·43 per cent.), on the work of the previous triennium. Small-pox was absent from the district throughout the triennium and the average output of work in the two years of severe epidemic small-pox 1911 and 1912 had been abnormally high, nearly 25,000 ; the sudden fall in 1913-14 to 14,485, has only gradually been retrieved—the returns for 1916-17 standing at 17,799 primary operations. It is impracticable for the hard-worked Civil Surgeon, Moulmein, to exercise much supervision in the district, and improvement in vaccination will depend mainly upon the attention devoted to the work by the Deputy Commissioner and his lay assistants. The work and conduct of the vaccination establishment has however been unsatisfactory, and reorganization is called for.

Tavoy District returns an increase of 2,698 primary operations, while Mergui shows a falling off of 472. Both districts have been remarkably free of small-pox for many years, Mergui wholly escaping the severe and widespread outbreak of 1911-12, and Tavoy returning only a small mortality in the former year. Mergui Town has however been visited by small-pox in the current year, 1917, 30 deaths having been registered up to the end of March. Revaccination returns show a great increase of 3,409 on the previous triennium, 1,925 operations having been performed in 1916-17 alone.

Thatôn District returns a decrease of 7,573 primary and 4,758 revaccinations. The maximum output (14,709 primary operations) was reached in 1912-13 as a result of serious outbreaks of small-pox in that and the two previous years—the decline commenced in 1913 (9,901 primary operations) and continued in spite of 260 deaths from small-pox being recorded in that year, and 41 in 1914; only 9,954 operations being returned for 1916-17. The organization of vaccination work in this district is manifestly unsatisfactory, and must be improved.

The work of Toungoo District has shown a most satisfactory improvement during the triennium, an increase of 8,922 primary operations and 802 revaccinations being recorded. The output of primary operations in the last year, 1916-17, was 13,224, the high-water mark of work in the six years, though practically equalled by that of 1914-15. The last serious small-pox outbreak in the district occurred in 1911. The improvement, starting from 1914, is to be attributed to the supervising work of the Assistant Health Officer, transferred to military duty early in the war, and to the increasing interest shown in vaccination by Civil Surgeons recently appointed to the district.

Mandalay Division.—Primary vaccination shows a relatively small decrease of 1,492 operations (1·84 per cent.) and revaccination, of 14,250 (59·52 per cent.) during the last triennium. The newly-created district of Putao submits returns of vaccination for the first time, 242 having been performed during 1916-17. Of the other five districts, Mandalay shows an increase of 4,888 primary operations and a decrease of 13,010 revaccinations. The last small-pox outbreak occurred in this district in 1913. Bhamo and Katha Districts return a deficit of 2,842 and 4,599 primary operations respectively. Ruby Mines and Myitkyina Districts show a small increase in primary operations of 78 and 741, and the last-named district an increase of 379 revaccinations.

Sagaing Division.—The work of vaccination has been almost uniformly good throughout the division, all four districts showing an increase in primary vaccination aggregating 6,846 on the previous triennium. The decrease in revaccination, 16,212, to which deficit Sagaing contributed 50 per cent., is accounted for by the absence of small-pox in the three most populous districts. There was an increase of 343 revaccinations in the Upper Chindwin District. Steady progress was made in Shwebo District during the triennium, the last year 1916-17 showing a total of 12,753 primary operations. Work in Sagaing District fluctuated slightly, the maximum outturn being 13,422 primary operations in 1914-15, the year following the last epidemic of small-pox in the district.

In Lower Chindwin District the work shows a slightly progressive upward tendency. The two last-named districts appear to be relatively well protected against small-pox, no extensive outbreaks having been reported during the last thirteen years. In Upper Chindwin District the outturn of work has maintained a fairly even level during the last four years, 1916-17 showing the best results for the triennial period. Shwebo shows the lowest returns numerically in respect to population, and some added stimulus is needed to the vaccination work of this district.

Magwe Division.—The grave deficit of 35,452 primary operations is returned for Magwe Division, which is by no means retrieved by the small advance of 1,605 revaccinations. The worst defaulting districts are Minbu and Magwe, which shows respectively decreases of 10,247 and 17,498 primary operations, but Pakôkku had 5,508 less primary operations and Thayetmyo 2,199 less than in the earlier triennium. The last small-pox epidemic visited these districts in 1912, and that year saw the zenith of vaccination activity in all the districts. Vaccination has since consistently declined year by year in Magwe District, from 20,143 in 1912-13, to 12,401 in 1916-17 In Minbu District the returns fell steadily from 14,037 in the epidemic year to 7,368 in 1915-16, with a slight recovery in the last year of the second period. In Pakôkku District the fall has been from 21,346 to 16,898 in 1916-17, about 1,000 less than the previous year. In Thayetmyo District the decrease is less marked, the fall from the maximum of 11,539 to 9,343 in 1916-17 being marked by fluctuations in intermediate years.

Meiktila Division.—The deficit in primary operations for the last triennium is 14,628 and in revaccinations 4,815. Of the four districts Kyauksè alone shows an increase of 141 primary operations, while Yamèthin returns an excess of 2,837 revaccinations. Myingyan has a deficit of 7,884 and Meiktila of 5,771 primary operations. The last outbreak of epidemic small-pox in this division was in 1913, but in Myingyan the mortality from the disease was higher in 1912, and Yamèthin returned its highest mortality from small-pox (262 deaths) in 1911. During the last thirteen years there has been little small-pox mortality recorded in Kyauksè District, and since the district is easily supervised and vaccination work proves on inspection to be creditably performed, it probably owns its relative immunity mainly to good vaccination work. In Meiktila District the highest total of primary vaccinations was returned for 1911-12, and there has been a steady annual decline since, in spite of outbreaks of small-pox in 1912 and 1913 In Yamèthin District there has been a slight falling off in primary operations during the last three years. Lack of supervision may even be a not less potent factor in some of these Upper Burma districts than the non-prevalence of small-pox in reducing the outturn of vaccination. In my experience the people only require a visit by and a little moral suasion from a superior Government official to bring them to accept the operation for their children readily enough.

Specially administered areas.—An increase of 2,551 primary operations and of 2,855 revaccinations is returned for the Northern Shan States District. This increase accrued wholly in the last year of the triennium, and is dependent upon the radical reorganization of the vaccination establishment and of the system for its control which was introduced in the previous year, but only began to produce a marked result in 1916-17. This improvement is wholly due to the great personal interest taken in vaccination by the Superintendent, Northern Shan States, Mr. H. A. Thornton, C.I.E., I.C.S , and his Assistant Political Officers, under whose fostering care the new scheme promises to produce very gratifying results.

In the Southern Shan States there is a decrease of 4,172 primary operations and an increase of 3,206 revaccinations. Recent enquiry by the Civil Surgeon, Taunggyi, has shown grave deficiencies in the work of the Vaccination staff in recent years, and has confirmed my previous doubts as to the reliability of their returns. The establishment is undergoing gradual reorganization, and future work will be greatly assisted by the recent addition to the Civil Surgeon's office staff of a sanitary clerk who will be largely employed in working up and systematizing the vaccination returns, which have recently been neglected and fallen into a state of confusion. The chief weakness in the system is, as elsewhere, the lack of reliable supervision, which is largely dependent upon the great size of the district and the inaccessibility to the Civil Surgeon of all those states which are outside a relatively small radius of Headquarters. Vaccination is most advanced in the more populous and accessible Western states.

Chin Hills.—The returns for the last triennium show an increase of 1,263 primary operations and a decrease of 66 revaccinations, on those of the earlier period—vaccination is on the whole progressive in this district. At the instance of the Superintendent, Chin Hills, the employment as vaccinators of several peons who accompany the Assistant Political Officers on tour has recently been approved, and will, it is expected, lead to an increase in the number of operations performed annually.

4. *Vaccination work in towns in* 1916-17 *compared with that of* 1915-16.—Thirty-five towns return an increase in the number of primary operations performed ; 21 towns a decrease on the work of the previous year. The percentage increase is conspicuous in the case of Yenangyaung (213 per cent.), Wakèma (201 per cent.), Sagaing (133 per cent.), Taungdwingyi (136 per cent.), Paungdè (111 per cent.), Akyab (68 per cent.), Meiktila (60 per cent.), Mergui (75 per cent.), Bhamo (51 per cent.), Zigôn (53 per cent.), Nattalin (54 per cent.) Thônzè (45 per cent.), Shwegyin (46 per cent.), Nyaunglebin (42 per cent.), Gyobingauk (41 per cent.), Kawkareik (41 per cent.), Myaungmya (26 per cent.), Useful progress was also made in the towns of Allanmyo (23 per cent.), Insein (20 per cent.), Prome (17 per cent.), Toungoo (15 per cent.), and Rangoon (14 per cent).

Rather large decreases are observed in the returns of the following towns, *viz.* Thatôn (47·43 per cent.), Sandoway (38·74 per cent.), Ngathaingyaung (34 per cent.), Letpadan (25·13 per cent.), Pyinmana (28·85 per cent.), Yamèthin (25·86 per cent.), Yandoon (20·98 per cent.), Pyapôn (12·40 per cent.), Tavoy (16·52 per cent).

Revaccination.—A return of 75,956 revaccinations performed in towns, during 1916-17, shows an increase of 76·98 per cent. on the outturn of the previous year. Thirteen towns out of fifty-seven return either none, or less than 10 revaccinations, against fifteen towns in 1915-16. A large increase in revaccination was shown by Rangoon, Prome, Paungdè, Pyapôn, Moulmein, Mergui, Toungoo, Mandalay, Sagaing, Minbu, and Salin. The towns of Tharrawaddy District return practically no revaccinations for the last year under report.

Ratio of successful cases.—The percentage ratio of success in primary vaccination for 57 towns in 1916-17 was 98·30 against 94·94 in the previous year, and in revaccination 68·69 against 46·71. Many towns claim 100 per cent. success in primary vaccination. The low success ratios of 83·91 per cent. and 87·86 per cent. in primary vaccination are returned by Pegu and Kyaikto towns, respectively.

5. *Infant vaccination in towns.*—In 57 towns where vaccination is compulsory under the Act of 1880, against 21,583 reported survivors of registered births 21,698 infants were successfully vaccinated in 1916-17. Eighteen towns return a considerably higher number of successful infant vaccinations than there were survivors of registered births—notably Akyab, Pegu, Nyaunglebin, Gyobingauk Kyaiklat, Moulmein, Mandalay, Pakôkku, Minbu, Magwe, Yamèthin, Pyinmana and Myingyan. The usual explanation of this anomaly is that these successful cases include infants brought into the town from rural areas for vaccination, or vaccinated by the town vaccinators outside urban limits. Many instances point to defective registration of births as the correct explanation. Appendix B

Several towns have done better than in the past in vaccinating a large proportion of the surviving infants; among them Prome, Paungdè, Tavoy, Yenangyaung may be specially mentioned. A low proportion of available infants was vaccinated at Sandoway, Syriam, Thôngwa, Letpadan, Yandoon, Kyangin, Myaungmya, Wakèma and Thatôn.

6. *Dispensary vaccination.*—During the last triennium there were 14,649 fewer vaccinations in Dispensaries than in the preceding triennium, the aggregates being for 1911—14, 26,287, and for 1914—17, 11,638. No less than 20,000 of the operations returned for the earlier period were performed during the small-pox outbreak of 1911 and 1912. The magnitude of the vaccination work done at dispensaries is directly dependent on the degree of prevalence of small-pox. Primary operations in the two successive periods numbered 15,327 and 7,473 respectively, and revaccinations 10,962 and 4,186. The percentage success obtained in primary operations was the same in the two periods (95 per cent.), while the revaccination success ratio was 57 per cent. in the earlier and 69 per cent. in the later period. Statement III.

Dispensary Vaccination in 1916-17 shows a slight decline on that of 1915-16 in both primary and revaccinations, but an advance on 1914-15 in primary operations.

7. *Vaccination in jails.*—These operations, which are compulsory, are not included in the totals of Statement I. In 1916-17 the total number of persons vaccinated was 24,388, including 2,274 primary operations with a success ratio of 82·28 per cent. and 22,114 revaccinations with one of 57·29 per cent.

8. *Verification of results of Vaccination.*—It would amply suffice for the maintenance of a proper check on the returns of the Vaccination staff for rural areas if a District Civil Surgeon could inspect annually 10 per cent. or even less of the primary operations performed by his staff, provided that a proper system of verification were applied to ensure that the work as a whole was truly sampled. This would involve the selection and visitation by him each year of different areas, scattered throughout the district, without the foreknowledge of any subordinate of the staff. Owing to various disabilities this is rarely done. The District Civil Surgeon ordinarily visits the same places year by year, and too often sees in successive years many of the same subjects, while the unprotected children are hurried into the background and escape detection and operation. Statement V

In 1914-15 Civil Surgeons claimed to have inspected 17·22 per cent. of all primary vaccinations, in 1915-16 11·82 per cent., and in 1916-17, 12·50 per cent., while Native Superintendents verified in the three successive years respectively 54·68 per cent., 49·09 per cent. and 55·26 per cent. The record is satisfactory as a whole, but the detailed verification statement reveals that in some districts verification by a responsible officer was lamentably deficient. In Rangoon Municipality the Health Officer and his senior assistants personally verified in the three years, successively 3·05 per cent., 11·06 and 12·51 per cent. of primary operations. Even the last ratio, which shows an improvement in 1916-17, indicates that too large a share of the final control of results is relegated to subordinates. In Myaungmya the Civil Surgeon in 1915-16 saw only 1·65 per cent. of primary operations. In Kyaukpyu in the same year the percentage inspected by the Civil Surgeon was 4·67, Ma-ubin 5·92, Mergui 1·38, Toungoo 3·34, Bhamo 1·29, Shwebo 3·16. In 1916-17 the ratio for Kyaukpyu was only 2·47, Bassein 0·91, Mergui 3·81, Henzada 3·72, Shwebo 3·41, Thayetmyo 3·70. On the other hand, in Kyauksè in the latter year the Civil Surgeon verified 24·84 per cent. of primary operations, in Lower Chindwin 48·67 per cent., in Minbu 51·18 per cent. The claims of the jail at Headquarters on the Civil Surgeon's time and attention are represented as presenting an insuperable obstacle to his touring except for short distances and at rare intervals, and this is perhaps true of the Central Jails—but the difficulty is no doubt sometimes exaggerated in the case of the smaller jails; one of which for instance exists at Mônywa, and did not prevent the Superintendent, who is Civil Surgeon of Lower Chindwin District, from verifying 5,684 primary cases, nearly 50 per cent. of the vaccination work performed in the District.

9. *Strength of Vaccination Establishment.*—The strength of the establishment stood at the end of 1913-14 as 44 Native Superintendents and 278 Statement II

vaccinators. It now includes 38 Native Superintendents and 299 vaccinators. The reduction in the cadre of Native Superintendents of Vaccination includes 3 appointments in the Southern Shan States, the style of which has been changed to that of "Head Vaccinator," 2 in the Northern Shan States, and one in Moulmein municipality, which have been wholly abolished.

The number of District Superintendents of Vaccination has been increased from 41 to 42 by the inclusion of the new District of Putao within the scope of the Department's activity.

10. *Dismissals and removals.*—Only one Native Superintendent was dismissed and 3 required to resign, in the period under report, as against 8 dismissed or removed in the previous triennium. The establishment of Vaccinators lost 34 men by dismissal or removal for bad or unsatisfactory conduct, against 14 in the earlier period.

Statement II 11. *Cost of the Department.*—The annual expenditure increased during the triennium by Rs. 21,403 from Rs. 206,269 in 1914-15 to Rs. 2,27,672 in 1916-17. The increase on establishment was Rs. 15,108, on contingencies Rs. 5,978, and on travelling allowance Rs. 317. Of the total increase Rs. 6,159-5-1 is accounted for by the Vaccine Depôt expenditure, the larger part of the increase being due to excess cost of contingencies (Rs. 4,811-10-2) and the balance is enhanced expenditure under establishment (Rs. 833-6-8) and travelling allowance (Rs. 514-4-3).

The average cost of each successful operation for the triennium was Re. 0-8-7 and in 1916-17 Re. 0-8-3. This is in excess of the cost in the previous triennium which averaged Re. 0-7-6. In 1916-17 the districts showing the highest cost per case were Putao Rs. 2-7-4, Northern Arakan Re. 1-7-6, Ruby Mines District Re. 1-5-6, and Northern Shan States Re. 1-4-2. The lowest cost was returned by Sagaing and Myingyan Districts, *viz.*, Re. 0-3-10.

12. *Vaccine Depôt, Meiktila.*—The work of the depôt has been maintained at a steady level throughout the triennium; the marginal comparative table shows the yield of lymph and number of doses issued during the period.

Year.	Number of calves inoculated.	Ounces of lymph.	Average yield per calf in grains	Number of doses issued.
1914-15 ...	282	269·4	465·8	730,986
1915-16 ...	345	250·6	351·9	722,314
1916-17 ...	358	279·0	305·5	726,424

The percentage of successful results obtained in 1916-17 in 322,178 primary operations reported to the Director was 97·32, against 98·27 in the previous year, the best result yet obtained. In 64,259 revaccinations a percentage success ratio of 53·06 was recorded.

Economy in every branch of expenditure was exercised during the year 1916-17.

The cost of the Depôt in 1916-17 as compared with that of 1915-16 shows a decrease of Rs. 3,823-6-10. The savings accrued under the head of establishment and are largely illusory, since the salary of a certain number of Native Superintendents of Vaccination under training, amounting to Rs. 3,405-7-8 was debited to the Vaccine Depôt account in the previous year, and there was no corresponding expenditure in the year under review.

Among other experiments made that of preserving vaccine lymph in the chamber attached to the small ice making machine gave satisfactory results, lymph used on calves after 13 months' storage giving satisfactory results.

The Director again calls attention to the needless waste of vaccine lymph by certain vaccination establishments—as instances he specifies that of the Mandalay Municipality where only 5,373 doses out of 11,658 were used for operations, and of Thatôn District, which used less than 50 per cent. of the 14,660 doses supplied.

13. *Training School.*—Two Native Superintendents and 41 apprentice vaccinators attended the classes during the year; all of them passed the final examination successfully.

14. *General remarks.*—Credit for the successful conduct of the Institution is due to Dr. W. D. Jones, who filled the post of Director during the year, and to his Assistant Director, 1st grade Sub-Assistant Surgeon P. Govinda Pillay, Rao Sahib, and to the subordinate staff. To these and to the many officials, including Civil Surgeons, Health Officers, and Deputy Commissioners of Districts and their assistants, who have devoted time and labour to the advancement of vaccination in the Province my thanks are offered.

C. E. WILLIAMS, M.D., D.P.H., D.T.M.,
Lieut.-Col., I.M.S.,
Superintendent-General of Vaccination, Burma.

RANGOON, *the 23rd May 1917.*

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A.—VACCINATION

STATEMENT NO. I.—*Showing the particulars of Vaccination in the*

No.	Districts.	Population of districts according to census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the year.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary Vaccination.				
									Total.	Successful.			Unknown.
										Under one year.	One and under six years.	Total of all ages.	
(1)	(2)	(3)	(4)	(5)	(6)			(7)	(8)	(9)	(10)	(11)	(12)
					Males.	Females.	Total.						
	ARAKAN DIVISION.												
1	Akyab	529,943	103	11	10,957	9,643	20,600	1,873	19,714	3,837	11,871	18,613	600
2	Hill Tracts, Northern Arakan	22,234	15	2	547	447	994	497	892	6	200	741	31
3	Kyaukpyu	184,916	42	6	3,827	3,055	6,882	1,147	5,835	578	2,538	4,811	915
4	Sandoway	102,803	27	4	2,381	1,924	4,305	1,076	4,009	286	1,605	3,267	82
	Total ...	839,896	57	23	17,712	15,069	32,781	1,425	30,450	4,707	16,214	27,432	1,658
	PEGU DIVISION.												
5	Rangoon	293,316	10,476	15	59,870	4,723	64,593*	4,273	8,052	4,601	1,444	6,421	1,610
6	Insein	265,245	136	6	6,373	4,191	10,564*	1,746	9,864	2,111	6,464	9,409	197
7	Hanthawaddy ...	333,669	196	8	6,913	6,526	13,439	1,680	11,748	2,141	6,471	11,032	563
8	Pegu	370,416	91	8	6,565	6,729	13,294	1,662	11,987	3,586	5,582	10,656	919
9	Tharrawaddy ...	433,520	151	8	9,867	11,365	21,232	2,654	20,223	7,131	10,431	19,716	47
10	Prome	378,871	139	12	14,506	16,176	30,682	2,557	13,919	3,209	7,852	12,802	649
	Total ...	2,073,737	156	57	104,094	49,710	153,804*	2,688	75,793	22,782	38,247	70,036	3,985
	IRRAWADDY DIVISION.												
11	Ma-ubin	305,073	185	9	9,110	9,411	18,521	2,058	15,307	2,619	9,826	11,765	273
12	Pyapôn	255,215	119	6	5,448	5,399	10,847	1,808	9,400	1,409	7,193	9,110	170
13	Bassein	440,938	107	9	8,657	7,758	16,415	1,824	16,415	2,589	8,174	15,457	682
14	Henzada	532,357	187	14	10,428	11,057	21,485	1,535	20,920†	5,952	11,527	18,729	1,727
15	Myaungmya ...	334,852	127	8	6,250	6,518	12,768	1,596	10,352	701	5,361	10,006	153
	Total ...	1,869,485	139	46	39,893	40,143	80,036	1,740	72,394†	13,270	42,081	65,077	3,005
	TENASSERIM DIVISION.												
16	Amherst	367,918	52	10	12,097	10,425	22,522	2,252	17,799	2,959	10,113	17,198	410
17	Tavoy	135,293	25	6	3,781	3,695	7,476	1,246	6,316†	3,579	2,180	6,011	44
18	Mergui	111,424	11	5	3,927	3,318	7,245	1,455	5,401†	413	2,512	4,986	179
19	Toungoo	351,076	57	9	7,963	6,978	14,941	1,660	13,224	2,376	64,74	12,757	314
20	Thatôn	416,975	85	7	5,163	5,665	10,828	1,547	9,954	2,213	5,074	8,948	633
21	Salween	46,603	17	1	1,496	901	2,397	2,397	1,680	25	474	1,561	...
	Total ..	1,429,294	40	38	34,427	31,012	65,439	1,722	54,374†	11,565	26,827	51,461	1,580
	MANDALAY DIVISION.												
22	Mandalay	340,770	161	14	7,751	7,198	14,949	1,068	11,892†	7,749	3,905	11,716	18
23	Bhamo	107,811	16	4	1,412	1,046	2,458	615	2,336	734	1,000	2,151	88
24	Katha	193,193	28	4	3,002	3,104	6,106	1,527	6,040	495	3,449	5,719	215
25	Ruby Mines ..	100,618	18	3	1,457	1,406	2,863*	901	2,815	891	1,578	2,649	163
26	Myitkyina	85,577	8	2	1,259	861	2,120	1,060	1,359	167	693	1,192	48
27	Putao	31,000	3	1	122	120	242	242	242	3	56	325	...
	Total ...	863,969	21	28	15,003	13,735	28,738*	1,021	24,676†	10,039	10,681	23,752	532
	SAGAING DIVISION.												
28	Shwebo	356,363	62	8	6,220	6,636	12,856	1,607	12,753	2,886	8,654	12,257	234
29	Sagaing	312,111	171	7	10,055	12,973	23,028	3,290	12,802	6,306	5,063	12,422	220
30	Lower Chindwin ...	316,175	91	6	5,808	6,173	11,981	1,997	11,779†	7,996	3,928	11,651	1
31	Upper Chindwin ...	170,622	11	6	4,729	4,955	9,684	1,614	8,473	636	5,532	8,022	217
	Total ...	1,155,271	44	27	26,812	30,737	57,549	2,131	45,807†	17,824	23,177	44,352	672
	MAGWE DIVISION.												
32	Thayetmyo	248,275	52	8	5,071	4,996	10,067	1,258	9,343†	2,352	5,099	8,546	476
33	Pakôkku ‡	436,160	44	10	11,701	11,551	23,252	2,325	16,898	6,176	7,516	16,210	507
34	Minbu	263,939	80	7	4,718	4,807	9,525	1,361	8,173	3,500	3,436	7,682	301
35	Magwe	359,526	93	8	6,753	7,073	13,826	1,728	12,401†	6,897	4,216	11,947	177
	Total ...	1,307,900	60	33	28,243	28,427	56,670	1,717	46,815†	18,925	20,267	44,385	1,461
	MEIKTILA DIVISION.												
36	Meiktila	279,822	128	6	4,467	4,733	9,200	1,533	8,656	1,720	5,743	8,137	435
37	Yamèthin	307,419	72	7	6,043	6,377	12,420	1,774	11,727	4,482	6,320	10,802	793
38	Kyauksè	141,426	111	3	2,561	2,839	5,400	1,800	4,936†	3,265	800	4,560	189
39	Myingyan	399,288	146	7	6,006	6,072	12,078	1,725	11,964	4,562	6,110	11,097	472
	Total ...	1,127,955	108	23	19,077	20,021	39,098	1,700	37,283†	14,029	18,973	34,596	1,889
	SHAN STATES.												
40	Northern Shan States ...	458,952	32	10	4,315	4,107	8,422	842	8,200	841	2,691	5,037	3,163
41	Southern Shan States ...	900,202	22	11	11,080	10,827	21,907	1,992	20,610	2,441	10,025	19,609	652
	Total ..	1,359,154	25	21	15,395	14,934	30,329	1,444	28,810	3,282	12,716	24 646	3,815
42	Chin Hills	119,556	15	3	2,511	1,516	4,027*	706	3,953†	102	857	2,006	1,778
	GRAND TOTAL FOR 1916-17	12,146,217	51	299	303,167	245,304	548,471*	1,825	420,357†	116,525	210,640	390,617	20,310
	GRAND TOTAL FOR 1915-16	12,115,217	52	297	254,780	213,996	468,776	1,546	392,740	117,458	186,958	362,493	19,579
	GRAND TOTAL FOR 1914-15	12,115,217	53	280	243,211	224,806	468,017	1,640	404,008	107,812	184,170	365,471	19,036

NOTE.– This statement does not include the figures for Dispensary
* Work done by other
† Secondary operations
‡ Including the area

DEPARTMENT.

Province of Burma during the year 1916-17 (Paragraphs 1 and 3).

Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.		No.
Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	No.	Ratio per 1,000.	No.	Ratio per 1,000.	
(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
886	592	69	97·33	72·46	36·24	3·04	7·79	17,808	38·60	162	·31	1
103	52	13	86·06	58·43	35·67	3·48	12·75	951	42·78	...	...	2
1,047	221	503	98·38	40·81	27·22	16·20	48·04	11,177	60·45	133	·72	3
296	22	16	83·19	7·86	31·99	2·05	5·41	4,052	39·41	25	·24	4
2,331	888	601	95·28	51·33	33·72	5·44	25·78	33,988	40·47	319	·39	
56,511	15,227	35,217	99·67	71·41	73·80	20·00	62·29	22,868	77·97	220	·75	5
700	205	98	97·33	31·05	36·25	2·00	14·00	....	...	...	...	6
1,691	796	293	98·63	56·91	35·57	4·79	17·33	7,719	20·65	28	·09	7
1,307	448	497	96·01	55·31	29·90	7·67	38·03	13,112	35·10	189	·49	8
1,009	604	38	97·87	62·20	46·96	·23	3·77	18,568	42·85	568	1·29	9
16,763	8,590	3,093	93·47	62·84	56·46	4·66	18·45	11,309	29·85	295	·78	10
78,011	25,870	39,236	97·53	66·72	46·25	5·26	50·30	79,445	38·31	1,306	·63	
3,214	1,082	413	98·21	38·63	51·94	1·78	12·85	13,421	43·99	42	·14	11
1,447	291	357	95·70	26·70	36·69	1·81	24·67	4,715	18·40	116	·45	12
...		...	98·31	...	35·07	4·15	...	14,891	33·77	90	·20	13
599	179	118	97·58	37·21	35·52	8·26	19·70	19,808	37·21	137	·26	14
2,416	1,502	106	98·11	65·02	34·37	1·48	4·39	6,799	20·20	140	·42	15
7,676	3,054	994	98·11	45·70	38·05	4·15	12·95	59,634	31·90	524	·28	
4,723	1,649	680	98·90	40·79	51·33	2·30	14·40	20,907	56·83	241	·65	16
1,290	637	191	95·08	57·96	49·14	·69	14·81	5,737	42·40	5	·04	17
1,925	860	178	95·18	49·23	52·47	3·31	9·25	4,911	44·08	..	...	18
1,717	710	162	98·81	45·66	38·36	2·37	9·44	10,357	29·50	119	·34	19
874	497	164	96·00	70·00	22·65	6·36	18·76	11,628	27·89	226	·54	20
767	340	...	95·77	44·33	40·79	...	...	1,565	33·57	...	...	21
11,296	4,693	1,375	97·48	47·30	39·29	2·91	12·17	55,105	38·55	592	·43	
3,071	2,065	120	98·67	69·98	40·14	·15	3·91	13,958	40·96	144	·42	22
122	62	7	95·69	53·91	20·53	3·77	5·74	2,822	26·18	...	...	23
66	21	1	98·18	32·31	28·96	3·56	1·52	8,227	41·51	...	...	24
45	36	...	99·02	80·00	26·49	5·78	...	2,640	26·23	...	...	25
770	633	34	99·23	86·68	22·55	3·56	4·43	1,566	18·30	...	...	26
...	...	...	92·98	...	7·26	...	...	...	...	...	...	27
4,074	2,822	162	98·29	72·14	30·73	2·16	3·98	29,214	35·07	...	...	
103	63	21	97·91	76·83	31·57	1·83	20·39	11,895	33·38	122	·35	28
10,226	7,045	1,151	98·73	77·63	62·37	1·72	11·26	18,347	58·78	28	·09	29
309	262	3	98·92	85·62	37·68	·01	·97	11,528	36·46	11	·03	30
1,211	714	57	97·17	61·57	51·20	2·56	4·71	8,174	47·91	...	...	31
11,849	8,084	1,232	98·27	76·14	45·39	1·47	10·40	49,943	43·23	161	·17	
740	418	69	96·38	62·30	36·11	5·09	9·32	10,259	41·32	52	·21	32
6,354	765	57	98·90	12·12	38·92	3·00	·90	17,587	40·32	40	·10	33
1,352	946	41	96·32	72·16	32·31	3·63	3·03	10,091	38·23	42	·16	34
1,479	497	113	97·73	36·38	34·61	1·43	7·64	16,982	53·59	73	·23	35
9,925	2,626	280	97·64	27·23	35·87	3·18	2·82	54,920	43·40	207	·17	
544	238	82	98·98	51·52	29·93	5·03	15·07	9,001	32·17	35	·13	36
693	396	161	98·78	74·44	36·43	6·75	23·23	10,625	34·56	99	·32	37
669	356	88	94·83	61·27	34·76	2·63	13·15	5,280	37·34	19	·13	38
114	19	6	96·56	17·59	27·84	3·95	5·26	14,152	32·02	44	·10	39
2,020	1,009	337	97·58	59·95	31·57	4·91	16·68	39,058	33·37	198	·17	
222	131	91	100·00	100·00	11·26	38·57	40·99	3,788	8·25	...	...	40
1,297	858	37	98·25	68·10	22·74	3·16	2·85	20,630	22·92	..	...	41
1,519	989	128	98·60	71·10	18·86	13·24	8·43	24,418	17·97	...	...	
91	36	34	91·74	63·16	17·03	44·85	37·36	1,867	15·61	...	...	42
123,792	50,071	44,379	97·64	59·32	36·28	4·83	84·46	427,591	35·29	8,451	·35	
76,834	34,456	16,556	97·14	57·18	32·77	4·99	21·55	416,351	34·40	8,771	·38	
65,463	31,584	8,262	94·95	60·46	33·03	4·71	12·62	404,774	34·37	3,921	·42	

Vaccination which are shown separately in Statement III.
agencies included.
included.
and population of the Pakôkku Chin Hills.

Summary.

—	Total number of persons vaccinated.		Total number of operations performed.		Percentage of successful cases in which results were known.		Average number of persons vaccinated by each vaccinator.		Number of children successfully vaccinated.		Ratio of successful vaccinations per 1,000 of population.	Total cost of Department.	Average cost of each successful case.
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Vaccinators employed.	Persons vaccinated by each vaccinator.	Under one year.	One year and under six years.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
												Rs. A. P.	Rs. A. P.
By special staff (Statement I).	417,365	128,454	418,043	128,454	97·64	59·28	299	1,825	116,426	210,371	36·19	227,671 13 8	0 8 3
By dispensary staff (Statement III).	2,899	1,178	2,900	1,178	94·66	66·35	...	...	265	1,094	·24	...	...
By other agencies, if any.	2,314	338	2,314	338	98·21	69·09	...	...	99	269	·09	...	...
Total for 1916-17...	422,578	129,970	423,257	129,970	97·62	59·40	299	1,825	116,790	211,734	36·53	...	...
Total for 1915-16...	394,791	78,462	395,597	78,462	97·14	67·65	297	1,546	118,023	188,256	33·07	...	...
Total for 1914-15 ...	404,258	66,843	405,724	66,843	94·92	60·54	280	1,640	108,233	184,852	33·21	..	...

A.—VACCINATION

STATEMENT NO. II—*Showing the cost of the Department in the*

No.	Districts.	Expenditure.										
		European supervising officers.	Pay.	Native supervising officers.	Pay.	Vaccinators.	Pay.	Clerks.	Pay.	Peons, etc.	Pay.	Total pay of establishment.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
			Rs. A. P.		Rs. A. P.		Rs. A. P.		Rs. A. P.		Rs. A. P.	Rs. A. P.
	ARAKAN DIVISION.											
1	Akyab	...	......	2	1,140 0 0	11	3,355 10 2	...	......	...	......	4,495 10 2
2	Hill Tracts, Northern Arakan...	...	......	...	......	2	715 0 0	...	......	...	......	715 0 0
3	Kyaukpyu	...	......	1	350 0 0	6	1,716 0 0	...	......	...	......	2,066 0 0
4	Sandoway	...	......	1	625 0 0	4	899 7 2	...	......		......	1,524 7 2
	Total ...	...	......	4	3,115 0 0	23	6,686 1 4	...	......	...	......	8,801 1 4
	PEGU DIVISION.											
5	Rangoon...	...	......	1	1,200 0 0	15	4,881 4 0	...	......	4	669 4 6	6,750 8 6
6	Insein	...	......	2	1,775 0 0	6	3,033 7 9	...	......	...	......	4,808 7 9
7	Hanthawaddy	...	......	3	994 0 0	8	3,661 0 0	...	......	...	......	4,655 0 0
8	Pegu	...	......	2	1,166 2 1	8	3,723 9 1	...	......	...	......	4,889 11 2
9	Tharrawaddy	...	......	6	1,260 0 0	8	2,332 14 0	...	......	...	......	3,592 14 0
10	Prome	...	......	1	1,175 0 0	12	4,141 13 1	...	......	...	......	5,316 13 1
	Total ...	...	......	15	7,570 2 1	57	21,773 15 11	...	......	4	669 4 6	30,013 6 6
	IRRAWADDY DIVISION.											
11	Ma-ubin	...	......	3	1,390 0 0	9	2,083 9 4	...	......	...	......	3,473 9 4
12	Pyapôn	...	......	3	840 0 0	6	1,953 0 0	...	......	...	......	2,793 0 0
13	Bassein	...	......	2	840 0 0	9	2,842 0 0	...	......	...	......	3,682 0 0
14	Henzada	...	......	3	840 0 0	14	4,437 10 4	...	......	...	......	5,277 10 4
15	Myaungmya	...	......	2	600 0 0	8	1,932 10 4	...	......	...	......	2,532 10 4
	Total ...	...	......	13	4,510 0 0	46	13,248 14 0	...	......	...	......	17,758 14 0
	TENASSERIM DIVISION.											
16	Amherst	...	......	4	1,097 9 3	10	3,130 9 6	1	240 0 0	...	......	4,468 2 9
17	Tavoy	...	......	1	900 0 0	6	1,822 6 4	...	......	...	......	2,722 6 4
18	Mergui	...	......	1	661 6 1	5	1,119 8 0	...	......	...	......	1,780 14 1
19	Toungoo	...	......	1	668 6 0	9	2,723 7 2	...	......	...	......	3,390 13 2
20	Thatôn	...	......	1	899 2 0	7	1,921 15 8	...	......	...	......	2,821 1 8
21	Salween	...	......	...	......	1	600 11 10	...	......	...	...	600 11 10
	Total ...	...	......	8	4,226 7 4	38	11,317 10 6	1	240 0 0	...	......	15,784 1 10
	MANDALAY DIVISION.											
22	Mandalay	...	......	2	938 11 4	14	6,395 9 6	...	......	...	......	7,334 4 10
23	Bhamo	...	......	...	......	4	1,391 9 3	...	......	...	......	1,391 9 3
24	Katha	...	......	1	478 5 4	4	1,144 4 1	...	......	...	......	1,622 9 5
25	Ruby Mines	...	......	1	1,170 0 0	3	1,190 0 0	...	......	...	......	2,360 0 0
26	Myitkyina	...	......	...	......	2	925 6 4	...	......	...	......	925 6 4
27	Putao	...	......	...	......	1	360 0 0	...	......	...	......	360 0 0
	Total ...	...	......	4	2,587 0 8	28	11,406 13 2	...	......	...	......	13,993 13 10
	SAGAING DIVISION.											
28	Shwebo	...	......	1	600 0 0	8	2,708 10 2	...	......	...	......	3,308 10 2
29	Sagaing	...	......	1	911 1 8	7	2,178 5 4	...	......	...	......	3,089 7 0
30	Lower Chindwin	...	......	1	1,150 0 0	6	1,928 0 0	...	......	...	......	3,078 0 0
31	Upper Chindwin	...	......	1	768 11 4	6	2,390 1 9	...	......	...	......	3,158 13 1
	Total ...	...	......	4	3,429 13 0	27	9,205 1 3	...	......	...	......	12,634 14 3
	MAGWE DIVISION.											
32	Thayetmyo	...	......	2	1,295 0 0	8	2,599 11 6	...	......	...	......	3,894 11 6
33	Pakôkku	...	......	1	1,150 0 0	10	3,164 5 9	...	......	1	210 15 10	4,525 5 7
34	Minbu	...	......	2	670 0 0	7	1,962 8 2	...	......	...	......	2,632 3 2
35	Magwe	...	......	2	1,020 0 0	8	2,552 7 8	...	......	...	......	3,572 7 8
	Total ...	...	......	7	4,135 0 0	33	10,278 12 1	...	......	1	210 15 10	14,624 11 11
	MEIKTILA DIVISION.											
36	Meiktila	...	......	1	567 13 9	6	1,837 0 0	...	......	...	......	2,404 13 9
37	Yamèthin	...	......	2	1,049 3 0	7	2,299 10 0	...	......	...	......	3,348 13 0
38	Kyauksè	...	......	1	575 0 0	3	1,020 0 0	...	......	...	......	1,595 0 0
39	Myingyan	...	......	2	995 0 0	7	2,080 4 1	...	......	...	......	3,075 4 1
	Total ...	...	......	6	3,187 0 9	23	7,236 14 1	...	......	...	......	10,423 14 10
	SHAN STATES.											
40	Northern Shan States ...	...	......	1	414 3 1	10	3,610 4 7	...	......	...	......	4,024 7 8
41	Southern Shan States ...	...	......	5	3,429 6 11	11	(a)5,842 5 1	...	......	7	2,591 2 10	11,862 14 10
	Total ...	...	......	6	3,843 10 0	21	9,452 9 8	...	......	7	2,591 2 10	15,887 6 6
42	Chin Hills	...	......	...	......	3	913 0 0		......	...	......	913 0 0
43	Meiktila Vaccine Depôt ...	1	1,795 2 6	1	2,116 12 9	...	‡1,156 12 9	2	1,939 10 10	11	1,809 7 2	8,817 14 0
44	Office of the S. G. V., Burma...	...	......	...	......	...	......	...	......	...	......	......
	GRAND TOTAL FOR 1916-17 ...	1	1,795 2 6	§68	37,720 14 7	299	1,02,676 8 9	3	2,179 10 10	23	5,280 14 4	1,49,653 3 0
	GRAND TOTAL FOR 1915-16 ...	1	1,906 7 3	66	36,637 11 1	297	97,383 2 8	2	1,783 1 1	26	5,105 6 1	1,42,815 12 2
	GRAND TOTAL FOR 1914-15 ...	1	1,795 0 0	50	31,634 4 6	280	94,110 5 1	3	2,035 15 5	24	4,969 14 5	1,34,545 7 5

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* Political

(*a*) Includes pay of six vaccinators

† Cost of medicines, instru

‡ This amount represents stipendiary allowance

§ This includes twenty-five Sub-Assistant Surgeons, one Superintendent in charge of Vaccine Depôt, Rangoon Municipality, one State official

‖ The average cost in this column is calculated on the total number of successful

DEPARTMENT.

Province of Burma during the year 1916-17 (Paragraphs 9 and 11).

Travelling allowance. (14)	Contingencies. (15)	Total cost. (16)	Paid from: Imperial Funds. (17)	Paid from: Provincial Funds. (18)	Paid from: Local Funds. (19)	Paid from: Municipalities. (20)	Paid from: Native States. (21)	Total. (22)	Number of all successful vaccinations and re-vaccinations. (23)	Average cost of each successful case. (24)	No. (25)
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.	
2,270 11 3	94 8 0	6,860 13 5	......	......	5,895 4 3	965 9 2	......	6,860 13 5	19,205	0 5 9	1
450 7 0	......	1,165 7 0	......	1,165 7 0	......	......	......	1,165 7 0	793	1 7 6	2
1,553 10 0	93 6 0	3,713 0 0	......	......	3,533 0 0	180 0 0	......	3,713 0 0	5,033	0 11 10	3
623 4 8	......	2,147 11 10	......	......	2,027 11 10	120 0 0	......	2,147 11 10	3,289	0 10 5	4
4,898 0 11	187 14 0	13,887 0 3	......	1,165 7 0	11,456 0 1	1,265 9 2	......	13,887 0 8	28,320	0 7 10	
315 15 6	4,868 9 2	11,965 1 2	......	420 0 0	......	11,545 1 2	......	11,965 1 2	21,301	0 9 0	5
2,779 3 9	53 7 0	7,641 2 6	......	......	7,091 4 9	549 13 9	......	7,641 2 6	9,546	0 12 10	6
2,622 4 6	132 1 0	7,409 5 6	......	......	6,881 1 6	528 4 0	......	7,409 5 6	11,828	0 10 0	7
3,048 15 0	171 3 0	8,109 13 2	......	......	7,143 2 11	966 10 3	......	8,109 13 2	11,074	0 11 9	8
2,022 5 3	100 0 0	5,715 3 3	......	......	5,055 3 3	660 0 0	......	5,715 3 3	20,350	0 4 6	9
1,680 14 0	....	6,997 11 1	......	......	5,706 6 5	1,291 4 8	......	6,997 11 1	21,392	0 5 3	10
12,499 10 0	5,325 4 2	47,838 4 8	......	420 0 0	31,877 2 10	15,541 1 10	......	47,838 4 8	95,491	0 8 0	
2,116 9 9	......	5,590 3 1	......	......	4,966 6 3	623 12 10	......	5,590 3 1	15,847	0 5 8	11
1,493 13 0	7 0 0	4,293 13 0	......	......	3,393 13 0	900 0 0	......	4,293 13 0	9,401	0 7 4	12
1,709 8 0	.....	5,391 8 0	......	......	4,491 8 0	900 0 0	......	5,391 8 0	15,467	0 5 7	13
2,606 9 6	...	7,884 3 10	......	......	6,828 3 10	1,056 0 0	......	7,884 3 10	18,908	0 6 8	14
1,455 11 1	84 1 0	4,072 6 5	......	......	3,541 14 5	530 8 0	......	4,072 6 5	11,508	0 5 8	15
9,382 3 4	91 1 0	27,232 2 4	......	......	23,221 13 6	4,010 4 10	......	27,232 2 4	71,131	0 6 2	
1,804 2 6	176 6 3	6,448 11 6	......	......	5,038 9 3	1,410 2 3	......	6,448 11 6	18,847	0 5 6	16
1,725 5 0	187 0 0	4,634 11 4	......	......	3,954 11 4	680 0 0	......	4,634 11 4	6,648	0 11 2	17
1,252 14 0	......	3,033 12 1	.....	......	2,738 4 1	295 8 0	......	3,033 12 1	5,846	0 8 4	18
1,786 1 0	1 14 0	5,178 12 2	.....	......	4,395 12 2	783 0 0	......	5,178 12 2	13,467	0 6 2	19
2,143 13 6	......	4,964 15 2	......	......	4,760 15 2	204 0 0	......	4,964 15 2	9,445	0 8 5	20
356 0 0	......	956 11 10	......	224 13 6	731 14 4	......	......	956 11 10	1,901	0 8 1	21
9,068 4 0	365 4 3	25,217 10 1	......	224 13 6	21,620 2 4	3,372 10 3	......	25,217 10 1	56,154	0 7 2	
1,036 4 6	19 0 6	8,389 9 10	......	3,391 8 0	......	4,998 1 10	......	8,389 9 10	13,781	0 9 9	22
583 5 3	......	1,974 14 6	......	1,721 9 10	......	253 4 8	......	1,974 14 6	2,213	0 14 3	23
687 5 8	......	2,309 15 1	......	2,309 15 1	......	......	......	2,309 15 1	5,740	0 6 5	24
1,216 5 9	......	3,576 5 9	......	2,966 1 9	......	......	610 4 0	3,576 5 9	2,665	1 5 6	25
469 11 8	......	1,395 2 0	......	1,395 2 0	......	......	......	1,395 2 0	1,930	0 11 7	26
165 0 0	28 10 3	553 10 3	*553 10 3	......	......	......	......	553 10 3	225	2 7 4	27
4,158 0 10	47 10 9	18,199 9 5	553 10 3	11,784 4 8	......	5,251 6 6	610 4 0	18,199 9 5	26,554	0 11 0	
1,649 6 0	......	4,958 0 2	......	4,647 0 2	......	311 0 0	......	4,958 0 2	12,320	0 6 5	28
1,593 12 0	......	4,683 3 0	.....	4,443 3 0	......	240 0 0	......	4,683 3 0	19,467	0 3 10	29
1,099 8 3	......	4,177 8 3	......	3,817 8 3	......	360 0 0	......	4,177 8 3	11,913	0 5 7	30
1,365 1 5	......	4,523 14 6	......	4,523 14 6	......	......		4,523 14 6	8,736	0 8 8	31
5,707 11 8	.....	18,342 9 11	......	17,431 9 11	......	911 0 0	......	18,342 9 11	52,436	0 5 7	
1,924 9 7	58 7 0	5,877 12 1	......	......	4,977 1 5	900 10 8	......	5,877 12 1	8,964	0 10 6	32
2,687 12 0	......	7,213 1 7	......	6,864 1 7	......	349 0 0	......	7,213 1 7	16,975	0 6 10	33
744 1 0	6 10 0	3,382 14 2	......	2,688 4 2	......	694 10 0	......	3,382 14 2	8,528	0 6 4	34
1,062 6 0	0 15 0	4,635 12 8	......	3,595 12 8	......	1,040 0 0	......	4,635 12 8	12,444	0 6 0	35
6,418 12 7	66 0 0	21,109 8 6	......	13,148 2 5	4,977 1 5	2,984 4 8	......	21,109 8 6	46,911	0 7 2	
1,115 10 0	80 0 0	3,600 7 9	......	3,101 7 9	......	499 0 0	......	3,600 7 9	8,375	0 6 11	36
1,272 9 6	4 12 0	4,626 2 6	......	3,738 12 2	......	887 6 4	......	4,626 2 6	11,198	0 6 7	37
736 4 6	4 12 0	2,336 0 6	......	2,336 0 6	......	......	......	2,336 0 6	14,916	0 7 7	38
859 12 0	......	3,935 0 1	......	3,228 0 1	......	707 0 0	......	3,935 0 1	11,116	0 8 10	39
3,984 4 0	89 8 0	14,497 10 10	......	12,404 4 6	......	2,093 6 4	......	14,497 10 10	35,605	0 6 6	
2,400 13 11	77 4 5	6,502 10 0	......	3,439 0 0	......	......	3,063 10 0	6,502 10 0	5,168	1 4 2	40
3,453 13 0	81 4 6	15,398 0 4	......	13,613 0 4	......	......	1,785 0 0	15,398 0 4	20,467	0 12 0	41
5,851 10 11	158 8 11	21,900 10 4	......	17,052 0 4	......	......	4,848 10 0	21,900 10 4	25,635	0 13 8	
455 2 0	.....	1,368 2 0	......	1,368 2 0	......	......	......	1,368 2 0	1,383	0 15 10	42
822 10 6	7,716 3 9	17,356 12 3	......	17,356 12 3	......	......	......	17,356 12 3	...	...	43
......	†721 13 1	721 13 1	......	721 13 1	......	......	......	721 13 1	...	...	44
63,249 6 9	14,769 3 11	2,27,671 13 8	553 10 3	93,077 5 8	93,152 4 2	35,429 11 7	5,453 14 0	2,27,671 13 8	4,39,620	0 8 3	
63,815 10 0	13,844 1 3	2,20,475 7 5	......	97,143 13 2	89,021 8 3	30,173 9 9	4,136 8 3	2,20,475 7 5	3,89,865	0 9 1	
62,932 5 0	8,791 5 3	2,06,269 1 8	......	85,390 4 9	88,926 5 7	28,489 1 3	3,463 6 1	2,06,269 1 8	3,92,250	0 8 5	

Fund India.
employed by Native States.
ments and uniforms.
given to apprentice vaccinators.
appointed by the *Sawbwa*, Hsipaw, three Head Vaccinators in Southern Shan States, and thirty-eight Native Superintendents of Vaccination.
vaccinations and re-vaccinations by the special staff only.

B.—DISPENSARY

STATEMENT No. III—*Showing Dispensary Vaccination in the*

No.	Districts.	Number of dispensaries in each district to which a vaccinator is attached.	Average number of vaccinators attached to dispensaries during the year.	Total number of persons vaccinated.	Average number of persons vaccinated by each vaccinator.	
						Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ARAKAN DIVISION.					
1	Akyab	......	......	......	......	......
2	Hill Tracts, Northern Arakan	......	......	3	......	3
3	Kyaukpyu	......	......	5	......	1
4	Sandoway	......	......	64	......	64
	Total ...	......	......	72	......	68
	PEGU DIVISION.					
5	Rangoon	......	......	......	......	......
6	Insein	......	......	......	......	......
7	Hanthawaddy	......	......	167	......	153
8	Pegu	......	......	......	......	......
9	Tharrawaddy	......	......	101	......	80
10	Prome	......	......	......	......	......
	Total ...	......	......	268	......	233
	IRRAWADDY DIVISION.					
11	Ma-ubin	......	......	216	......	67
12	Pyapôn	......	......	......	......	......
13	Bassein	......	......	210	......	......
14	Henzada	......	......	......	......	......
15	Myaungmya	......	......	44	......	44
	Total ...	......	......	470	......	111
	TENASSERIM DIVISION.					
16	Amherst	......	......	313	......	283
17	Tavoy	......	......	......	......	......
18	Mergui	......	......	171	......	113
19	Toungoo	......	......	29	......	27
20	Thatôn	......	......	......	......	......
21	Salween	......	......	170	......	146
	Total ...	......	......	683	......	569
	MANDALAY DIVISION.					
22	Mandalay	......	......	33	......	29
23	Bhamo	......	......	......	......	......
24	Katha	......	......	195	......	156
25	Ruby Mines	......	......	......	......	......
26	Myitkyina	......	......	1,202	......	887
27	Putao	......	......	17	......	17
	Total ...	......	......	1,447	......	1,089
	SAGAING DIVISION.					
28	Shwebo	......	......	......	......	......
29	Sagaing	......	......	......	......	......
30	Lower Chindwin	......	......	7	......	8*
31	Upper Chindwin	......	......	552	......	504
	Total ...	......	......	559	......	512*
	MAGWE DIVISION.					
32	Thayetmyo	......	......	......	......	......
33	Pakôkku	......	......	167	......	50
34	Minbu	......	......	......	......	......
35	Magwe	......	......	57	......	......
	Total ...	......	......	224	......	50
	MEIKTILA DIVISION.					
36	Meiktila	......	......	32	......	18
37	Yamèthin	......	......	......	......	......
38	Kyauksè	......	......	......	......	......
39	Myingyan	......	......	......	......	......
	Total ...	......	......	32	......	18
	SHAN STATES.					
40	Northern Shan States	......	......	4	......	4
41	Southern Shan States	......	......	219	......	192
	Total .	......	......	223	......	196
42	Chin Hills	......	......	99	......	54
	GRAND TOTAL ...	......	......	4,077	......	2,900*
	GRAND TOTAL FOR 1915-16 ...	......	......	4,477	......	2,657
	GRAND TOTAL FOR 1914-15 ...	......	......	3,084	......	1,716

*Includes secondary

VACCINATION.

Province of Burma for the year 1916-17 (Paragraph 6).

Primary Vaccination.				Re-vaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases to total cases.		No.
Successful.			Unknown.	Total.	Successful.	Unknown.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	
Under one year.	One and under six years.	Total of all ages.									
(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
...	...	...	...	...	...	...	...	...	...	...	1
2	1	3	...	..	...	...	100·00	...	...	...	2
...	1	1	...	4	1	...	100·00	25·00	...	...	3
...	15	58	...	...	...	...	90·63	...	...	...	4
2	17	62	...	4	1	...	91·18	25·00	...	...	
...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	6
24	62	131	22	14	4	10	100·00	100·00	14·38	71·43	7
..	...	...	...	...	...	...	...	...	...	...	8
10	53	80	..	21	16	...	100·00	76·19	...	...	9
...	...	...	...	...	...	...	...	...	...	...	10
34	115	211	22	35	20	10	100·00	80·00	9·44	28·57	
3	6	11	56	149	47	80	100·00	68·12	83·58	53·69	11
...	...	...	...	...	...	...	...	...	...	...	12
...	...	...	...	210	106	18	...	55·21	...	8·57	13
...	...	...	...	...	...	...	...	...	...	...	14
3	12	41	3	...	...	...	100·00	...	6·82	...	15
6	18	52	59	359	153	98	100·00	58·62	53·15	27·30	
66	155	239	40	30	6	10	98·35	30·00	14·13	33·33	16
...	...	..	..	...	...	...	...	...	...	...	17
11	28	57	32	58	12	18	70·37	30·00	28·32	31·03	18
2	12	27	...	2	1	...	100·00	50·00	...	...	19
...	...	...	...	...	...	...	..	...	...	...	20
2	53	140	...	24	14	...	95·89	58·33	...	...	21
81	248	463	72	114	33	28	93·16	38·37	12·65	24·56	
10	19	29	...	4	3	1	100·00	100·00	...	25·00	22
...	...	...	...	...	...	...	...	...	...	..	23
14	96	121	14	39	26	4	85·21	74·29	8·97	10·26	24
...	...	...	...	...	..	...	...	...	...	...	25
33	56	656	180	315	238	44	92·79	87·82	20·29	13·97	26
1	11	16	1	...	...	...	100·00	...	5·88	...	27
58	182	822	195	358	267	49	91·95	86·41	17·91	13·69	
...	...	...	...	...	...	...	...	...	...	...	28
...	...	...	...	..	...	...	...	...	...	...	29
2	5	7	...	...	...	...	87·50	...	...	...	30
35	368	451	44	48	34	12	98·04	94·44	8·73	25·00	31
37	373	458	44	48	34	12	97·86	94·44	8·59	25·00	
...	...	...	...	...	...	...	...	...	...	...	32
4	24	48	...	117	65	4	96·00	57·52	...	3·42	33
...	...	...	...	...	...	...	...	...	...	...	34
...	...	...	...	57	34	14	...	79·07	...	24·56	35
4	24	48	...	174	99	18	96·00	63·46	...	10·34	
4	6	10	8	14	3	8	100·00	50·00	44·44	57·14	36
...	.	...	...	...	...	...	...	...	...	...	37
...	...	...	...	...	...	...	...	...	...	...	38
...	...	...	...	...	...	...	...	...	...	...	39
4	6	10	8	14	3	8	100·00	50·00	44·44	57·14	
1	3	4	...	...	...	...	100·00	...	...	...	40
26	104	147	44	27	18	1	99·32	69·23	22·92	3·70	41
27	107	151	44	27	18	1	99·34	69·23	22·45	3·70	
12	4	43	5	45	5	...	87·76	11·11	9·26	...	42
265	1,094	2,320	449	1,178	633	224	94·66	66·35	15·48	19·02	
570	1,298	2,535	257	1,628	1,159	107	97·50	76·20	9·00	6·57	
421	632	1,509	93	1,380	729	248	92·93	64·40	5·42	17·97	

operations.

COMPARATIVE STATEMENT No. IV—*Showing the number of persons primarily vaccinated Burma in each of the under*

Establishments.	PERSONS PRIMA									
	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
	1907-08.		1908-09.		1909-10.		1910-11.		1911-12.	
(1)	(2)		(3)		(4)		(5)		(6)	
Government	148,497	133,229	147,185	131,451	178,234	177,619	142,512	132,535	166,142	158,306
Municipal	48,060	41,811	43,072	38,908	45,573	44,057	37,115	32,308	44,023	40,089
Local Funds	138,772	119,609	138,167	122,307	112,135	90,741	151,649	142,461	193,961	180,546
Native States	5,203	4,330	6,991	5,262	10,081	6,581	13,177	10,462	11,357	9,194
Dispensary	10,443	7,457	7,562	5,287	5,475	4,304	8,268	7,304	5,786	5,431
Other Agencies *	...	...	...	...	...	...	...	...	..	...
ARMY.										
Europeans	59	36	37	35	68	56	102	62	47	40
Natives	408	279	455	396	306	269	190	153	388	338
Total ...	351,442	306,751	343,469	306,646	351,872	323,630	356,073	325,285	421,704	393,944

* Include operations performed by private practitioners, missionaries,

STATEMENT No. V—*Showing particulars of Vaccination verified*

No.	Districts.	TOTAL NUMBER OF PERSONS VACCINATED.		TOTAL NUMBER INSPECTED			
				By Deputy Sanitary Commissioner or Civil Surgeons.		*By Native Superintendents or other Inspecting Officers.*	
		Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Akyab	19,714	886	913	......	9,065	789
2	Hill Tracts, Northern Arakan ..	895	102	......	......	81	8
3	Kyaukpyu	5,836	1,051	144	24	2,172	104
4	Sandoway	4,073	296	1,037	41	3,312	190
5	Rangoon	8,052	56,541	1,007	521	5,207	20,956
6	Insein	9,864	700	1,633	44	8,195	503
7	Hanthawaddy	11,901	1,705	2,090	245	8,802	943
8	Pegu	11,987	1,307	1,500	93	10,003	897
9	Tharrawaddy	20,303	1,080	2,630	182	9,321	185
10	Prome	13,919	16,763	2,105	931	3,673	2,884
11	Ma-ubin	15,374	3,363	1,785	22	7,653	1,406
12	Pyapôn	9,400	1,417	1,394	124	6,993	1,119
13	Bassein	16,415	210	149	......	7,940	192
14	Henzada	20,886	599	776	......	8,113	250
15	Myaungmya	10,396	2,416	716	8	6,569	1,420
16	Amherst	18,082	4,753	2,726	251	7,789	2,244
17	Tavoy	6,186	1,290	2,000	116	4,952	444
18	Mergui	5,463	1,983	203	472	2,299	640
19	Toungoo	13,251	1,719	562	40	6,947	764
20	Thatôn	9,954	874	2,891	624	4,639	478
21	Salween	1,776	791	......	......	193	41
22	Mandalay	11,907	3,075	558	12	8,054	1,163
23	Bhamo	2,336	122	190	1	106	1
24	Katha	6,196	105	675	.....	2,891	54
25	Ruby Mines	2,818	45	1,341	17	2,507	41
26	Myitkyina	2,237	1,085	377	704	1,860	381
27	Putao	259	......	259	......	......	......
28	Shwebo	12,753	103	435	......	6,935	92
29	Sagaing	12,802	10,226	2,597	1,221	10,853	5,175
30	Lower Chindwin	11,679	309	5,684	245	8,737	286
31	Upper Chindwin	8,977	1,253	495	131	4,707	760
32	Thayetmyo	9,327	740	345	87	7,442	362
33	Pakôkku	16,948	6,471	2,029	565	5,905	1,484
34	Minbu	8,173	1,352	4,183	867	6,437	1,113
35	Magwe	12,347	1,536	932	1	5,379	877
36	Meiktila	8,674	558	573	......	4,046	52
37	Yamèthin	11,727	693	1,272	......	8,322	165
38	Kyauksè	4,731	669	1,175	127	4,251	464
39	Myingyan	11,964	114	973	62	8,022	10
40	Northern Shan States	8,204	222	593	222	473	......
41	Southern Shan States	20,802	1,324	1,052	......	13,163	762
42	Chin Hills	3,990	136	814	30	......	......
	GRAND TOTAL FOR 1916-17 ...	422,578	129,970	52,818	8,030	233,508	49,649
	GRAND TOTAL FOR 1915-16 ...	394,791	73,462	46,676	6,080	193,786	38,636
	GRAND TOTAL FOR 1914-15 ...	404,258	66,843	69,630	6,051	221,030	34,316

and the number of those persons who were successfully vaccinated in the Province of mentioned official years.

RILY VACCINATED.

Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Establishments.
1912-13.		1913-14.		1914-15.		1915-16.		1916-17.		
(7)		(8)		(9)		(10)		(11)		
184,794	174,075	171,608	153,632	166,653	150,189	149,953	139,601	155,431	144,836	Government.
35,714	34,275	33,098	31,476	33,005	30,815	32,795	31,123	38,123	34,760	Municipal.
186,353	171,957	210,401	192,887	192,408	175,416	198,458	184,045	213,420	200,118	Local Funds.
8,662	7,516	6,826	5,751	2,944	2,172	3,390	2,203	10,391	10,025	Native States.
5,966	5,518	3,573	3,077	1,704	1,509	2,849	2,535	2,899	2,320	Dispensary.
...	...	...	...	7,544	6,879	7,341	5,520	2,314	878	Other Agencies.
										ARMY.
62	59	69	64	42	30	25	25	10	10	Europeans.
464	393	255	224	253	174	655	513	597	512	Natives.
422,015	393,793	425,830	392,111	404,553	367,184	395,471	365,565	423,185	393,459	Total.

licensed vaccinators and Native State officials.

by Inspecting Officers during the year 1916-17 (Paragraph 8).

PERCENTAGE OF INSPECTIONS TO TOTAL NUMBER VACCINATED.				PERCENTAGE OF CASES FOUND SUCCESSFUL OF TOTAL NUMBER INSPECTED.				PERCENTAGE OF SUCCESS REPORTED BY VACCINATORS.		No.
By Deputy Sanitary Commissioner or Civil Surgeons.		*By Native Superintendents or other Inspecting Officers.*		*By Deputy Sanitary Commissioner or Civil Surgeons.*		*By Native Superintendents or other Inspecting Officers.*				
Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.	
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
4·63	....	45·98	89·05	86·75	......	94·59	55·01	97·38	72·46	1
......	......	9·05	7·84	......	.....	74·07	50·00	86·06	68·43	2
2·47	2·28	37·22	9·90	79·17	25·00	76·84	26·92	98·38	40·81	3
25·46	13·85	81·32	64·19	86·98	9·76	87·05	10·00	83·19	7·86	4
12·51	·92	64·67	37·06	99·80	52·98	99·92	70·76	99·67	71·41	5
16·56	6·29	83·08	71·86	98·59	13·64	99·05	33·40	97·33	84·05	6
17·56	14·37	73·96	55·31	97·80	53·47	98·86	69·25	98·63	56·94	7
12·51	7·12	83·45	68·63	96·53	47·31	85·00	24·30	96·01	55·31	8
13·95	17·67	45·91	13·11	98·90	91·21	99·11	65·93	97·87	62·20	9
15·12	5·55	26·39	17·20	90·40	65·63	82·25	41·68	96·47	62·84	10
11·61	·65	49·78	41·81	93·89	40·91	96·73	39·40	98·21	38·63	11
14·83	8·57	74·39	77·83	88·31	50·81	97·51	28·87	98·70	26·70	12
·91	......	48·37	91·43	100·00	......	87·77	55·21	98·31	....	13
8·72	......	38·84	41·74	86·21	......	87·01	25·60	97·58	87·21	14
6·89	·33	63·19	58·77	97·07	100·00	98·39	67·54	98·11	65·02	15
15·08	5·28	43·08	47·21	98·72	41·83	98·63	32·04	98·90	40·79	16
82·33	8·99	80·05	34·42	97·00	18·97	97·90	49·55	95·08	57·96	17
3·81	23·80	42·08	32·27	74·04	30·72	94·87	58·28	95·48	49·23	18
4·24	2·33	52·43	44·44	99·47	30·00	99·14	48·43	98·81	45·66	19
29·04	71·40	46·60	54·69	91·91	69·59	99·12	75·94	96·00	70·00	20
.. ...	......	10·87	5·18	......	......	98·37	48·78	95·77	44·33	21
4·69	·39	67·64	37·82	98·57	100·00	97·28	69·48	98·67	69·98	22
8·13	·82	4·54	·82	85·79	100·00	96·28	100·00	95·69	53·91	23
10·89	......	46·66	51·43	78·81	.....	97·58	75·93	98·18	32·31	24
47·59	37·78	88·96	91·11	73·68	52·94	97·69	75·61	99·02	80·00	25
16·85	64·83	83·15	35·12	97·35	83·52	85·00	75·59	99·28	86·68	26
100·00	......	......	......	93·05	......	......	......	92·98	......	27
3·41	......	54·88	89·32	96·32	......	98·17	73·91	97·91	76·83	28
20·29	11·94	80·87	50·61	97·04	74·94	98·02	77·20	98·73	77·63	29
48·67	79·29	74·81	92·56	98·40	76·33	98·33	86·71	98·92	85·62	30
5·51	10·41	52·43	60·37	94·34	45·80	94·58	43·55	97·17	61·87	31
8·70	11·76	79·79	48·92	100·00	100·00	94·57	55·52	96·38	62·30	32
11·97	8·73	34·84	22·93	98·37	16·99	98·56	17·99	98·30	12·12	33
51·18	64·13	78·76	82·32	98·06	79·11	96·05	64·87	96·32	72·16	34
7·55	·07	43·57	57·10	98·93	......	98·74	11·97	97·73	36·38	35
6·61	... ..	46·65	9·32	98·08	......	99·83	84·62	98·98	51·52	36
10·85	......	70·96	23·81	98·58	......	98·61	57·58	98·78	74·44	37
24·84	18·99	89·85	69·33	95·91	59·06	86·29	39·44	94·88	61·27	38
8·13	54·39	67·05	8·77	84·79	100·00	96·41	80·00	96·56	17·59	39
7·23	100·00	5·77	... ..	92·92	59·01	97·67	......	100·00	100·00	40
5·06	... ..	63·28	57·55	96·96	......	97·58	75·33	98·25	68·10	41
20·40	22·06	.. ...	......	97·79	33·33	......	......	91·74	63·16	42
12·50	6·18	55·26	38·20	95·01	61·77	96·04	60·08	97·64	59·32	
11·82	7·75	49·09	49·24	95·43	54·29	94·05	60·38	97·14	57·18	
17·22	9·05	54·68	51·34	93·98	67·96	93·52	65·11	94·93	60·46	

APPENDIX A.

Statement showing the ratio per 10,000 *successfully vaccinated and the mortality from small-pox by quinquennial periods for Lower Burma only.*

Official year. (1)	Ratio per 10,000 successfully vaccinated. (2)	Quinquennial mean. (3)	Calendar year. (4)	Ratio per 10,000 of mortality from small-pox. (5)	Quinquennial mean. (6)
1901-02	331·40	333·47	1901	4·61	4·57
1902-03	307·25		1902	2·91	
1903-04	340·74		1903	2·38	
1904-05	318·68		1904	2·46	
1905-06	374·28		1905	10·48	
1906-07	357·65	305·89	1906	14·69	4·76
1907-08	294·95		1907	2·87	
1908-09	289·34		1908	1·39	
1909-10	300·97		1909	1·57	
1910-11	238·91		1910	3·27	
1911-12	396·05	367·28	1911	9·13	4·47
1912-13	360·56		1912	9·61	
1913-14	380·31		1913	2·87	
1914-15	339·06		1914	·39	
1915-16	360·44		1915	·33	
1916-17	404·85	...	1916	1·06	

APPENDIX B.

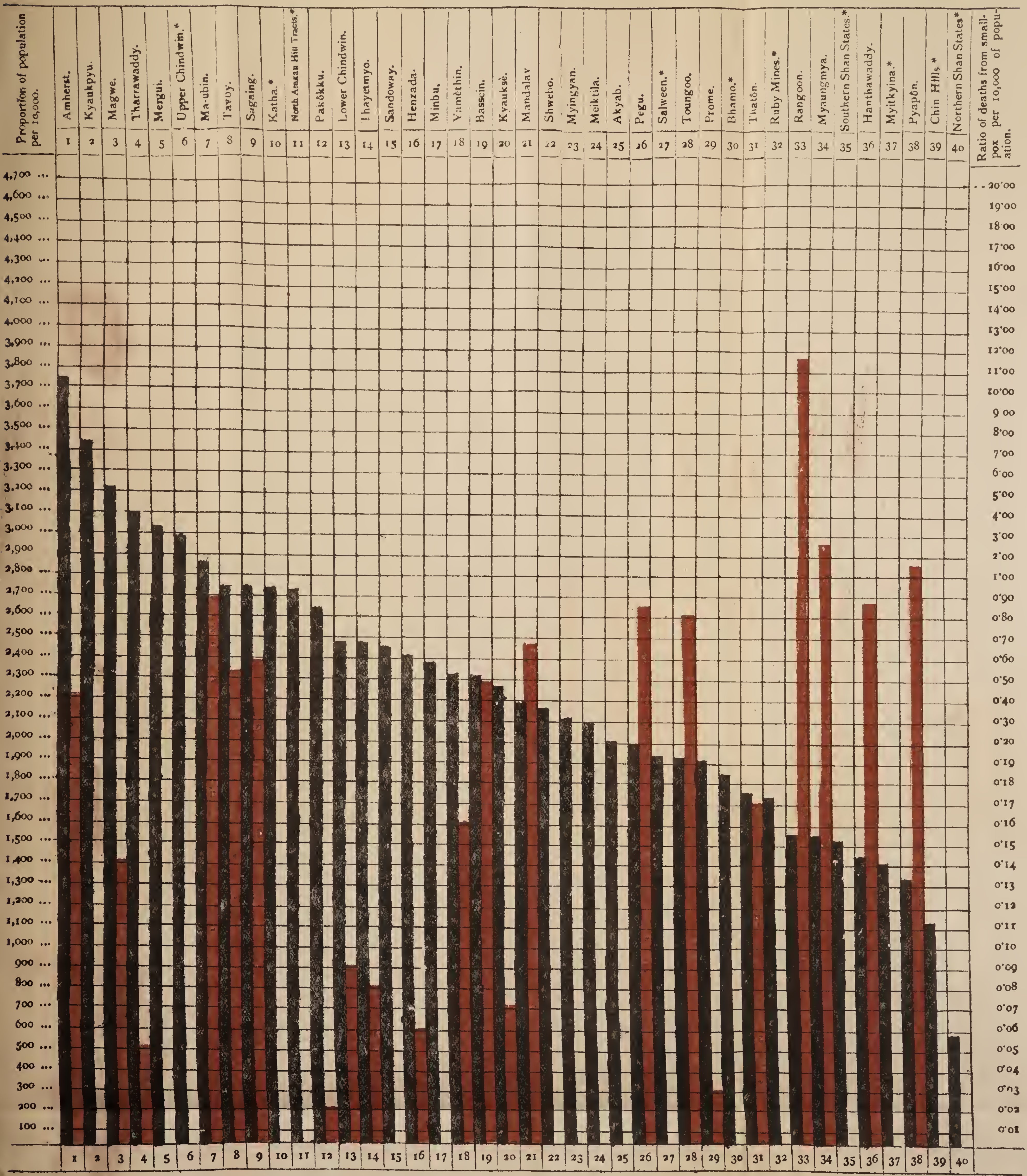
Statement showing the number of vaccinations performed in Municipal towns and notified areas (*to which Vaccination Act has been extended*) *on children under one year of age* (Paragraph 5).

Towns. (1)	Number of births during the year 1916-17. (2)	Number of deaths among children under one year during the year 1916-17. (3)	Number of successful operations on children under one year during the year ending 31st March 1917. (4)	Date of extension of Vaccination Act into towns. (5)
Akyab	639	186	531	August 1883.
Kyaukpyu	73	9	52	April 1894.
Sandoway	108	15	21	September 1890.
Rangoon	6,329	1,728	5,046	April 1884.
Insein	293	75	176	14th March 1912.
Syriam	247	38	114	29th January 1913.
Thôngwa	270	46	141	3rd March 1914.
Pegu	482	104	408	March 1893.
Nyaunglèbin	213	51	202	29th March 1910.
Thônzè	308	56	226	October 1897.
Zigôn	203	39	118	11th May 1914.
Letpadan	314	90	136	January 1897.
Gyobingauk	204	75	136	February 1897.
Minhla	82	32	43	11th May 1914.
Nattalin	151	30	96	11th May 1914.
Prome	770	106	629	June 1890.
Paungdè	486	114	300	August 1890.
Ma-ubin	188	40	132	October 1891.
Yandoon	244	35	129	January 1892.
Danubyu	166	38	96	9th July 1909.
Pyapôn	174	14	147	November 1904.
Kyaiklat	214	51	233	15th December 1904.
Bassein	974	389	447	September 1888.
Ngathainggyaung	182	145	71	February 1890.
Henzada	595	122	341	January 1889.
Myanaung	219	40	153	July 1889.
Kyangin	242	55	70	August 1894.
Myaungmya	170	29	91	June 1894.
Wakèma	271	36	105	27th April 1907.
Moulmein	1,529	236	1,429	August 1885.
Kawkareik	182	56	56	17th September 1914.
Tavoy	967	215	746	December 1889.
Mergui	489	82	287	October 1891.
Thatôn	439	102	168	October 1891.
Kyaikto	170	28	101	March 1897.
Toungoo	532	110	345	May 1889.
Shwegyin	188	29	153	January 1890.
Mandalay	4,521	1,952	3,695	August 1891
Maymyo	286	108	152	October 1912.
Bhamo	130	25	45	26th October 1894.
Shwebo	278	93	140	June 1894.
Sagaing	441	74	286	April 1894.
Mônywa	333	57	225	March 1893.
Thayetmyo	326	56	246	May 1889.
Allanmyo	285	55	241	May 1903.
Pakôkku	558	120	463	April 1892.
Minbu	203	50	168	March 1896.
Salin	244	61	187	March 1896.
Magwe	215	69	180	10th March 1913.
Taungdwingyi	243	109	138	February 1893.
Yenangyaung	222	37	170	10th March 1913.
Meiktila	258	65	124	June 1906.
Yamèthin	843	136	271	February 1892.
Pyinmana	511	119	454	November 1891.
Pyawbwè	148	44	82	May 1912.
Kyauksè	221	50	149	May 1894.
Myingyan	586	150	608	September 1891.
Total ...	29,659	8,076	21,698	

G.B.C.P.O.—No. 15, S.C., 13(*b*), 24-7-1917—490.

APPENDIX C.

Diagram showing the Proportion of Population protected during the seven official years from 1910-11 to 1916-17 and the death-rate from Small-pox during the calendar year 1916 in districts where registration is in force.



■ Indicates proportion of population protected per 10,000.

🟥 Indicates ratio of deaths from small-pox per 10,000 of population.

* Registration of vital statistics is not carried out in these districts.

G.B.C.P.O.—No. 5, Sany. Commr., 17-7-1917. 450, T.L.R., L.

TRIENNIAL REPORT

ON

VACCINATION IN BURMA

FOR THE YEARS 1914-15 to 1916-17

HONI SOIT QUI MAL Y PENSE
DIEU ET MON DROIT

RANGOON
OFFICE OF THE SUPERINTENDENT, GOVERNMENT PRINTING, BURMA
1917